marketplace. According to the 1997 Annual Report of the Edison Electric Institute, more than half of all investor-owned utilities have a telecommunications related subsidiary.[36] Given the on-going changes and uncertainty surrounding the ultimate structure of the electric industry, and the importance of advanced telecommunications and information technology capabilities to the competitive utility environment, all utilities must be afforded an equal opportunity to utilize their telecommunications infrastructure to maximum advantage. To do otherwise, could well tip the balance in the competition between privately owned and publicly owned electric utilities that has served the nation well for the last century. Given Congress' intent to preserve the competitive balance in the electric power industry, it is inconceivable that Congress could have intended that the Commission do anything to hamstring the public power sector in this manner.

In a deregulated environment, public power utilities are also likely to face competition in the provision of unbundled energy services, such as meter reading, from telecommunications and cable companies. This heightens all the more their need and desire to have full flexibility in engaging in telecommunications activities.

B. Specific Steps that the Commission Should Take

1. The Commission Should Define "Advanced Telecommunications Capability" Broadly

As the Commission notes, "Section 706(c)(1) defines 'advanced telecommunications capability,' 'without regard to any transmission media or technology, as high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology.'" *NOI*, ¶ 13. The Commission invites comments on how it should interpret these terms.

[36] Edison Electric Institute 1997 Financial Review, p.14.

APPA suggests that the Commission's determination of what constitutes advanced services should be informed by the underlying goal of the Act to provide all American consumers the benefits of new telecommunications technologies. Rather than assume that "advanced telecommunications capabilities" consist entirely of high-end technologies that are unlikely to be available on a widespread basis in the near term, the Commission should adopt a flexible definition that encompasses all facilities that are capable of providing services beyond those provided for under its "universal service" rules.[37] In its *Report and Order* (*R&O*) establishing rules for the implementation of the Act's universal service provisions, CC Docket No. 96-45, the Commission adopted a functional definition of the "core" or "designated" services that are to be supported by universal service support mechanisms.[38] The core services identified in the universal service *R&O* comprise the "basic" services that all Americans are entitled to receive on a "universal" basis. It is therefore reasonable to treat any services or capabilities beyond these "basic" services as the starting point for determining whether and how the Commission should promote alternatives to support universal service mechanisms.

APPA urges the Commission not to focus unduly on "high-end" technologies, as this could lead the Commission to misdirect its – and the Nation's – priorities. Many rural and low-income communities do not currently have, and may not soon acquire, access to even the "low-end" services and capabilities that exceed the "basics" covered by the Universal Service Program. APPA submits that overcoming this challenge is where the Commission's priorities should lie under Section 706.

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[37] This is not to suggest that the term advanced capabilities does not also encompass technologies that have the potential to provide services that are on an order of magnitude superior to today's technologies.

[38] *In the Matter of Federal State Board on Universal Service, Report and Or*der, CC Docket no. 96-45, released May 8, 1997, at ¶61.

In implementing Section 706, the Commission should also focus on the ends that technology serves and should not be unduly concerned with promoting particular technologies. Indeed, advanced services are likely to be delivered over a network of networks without any particular media or entity providing all component parts or services even within a single geographic area. No one technology is likely to emerge as a panacea to meet all of the advanced telecommunications capabilities. For example, as the Commission notes in the *NOI,* while digital subscriber line (DSL) technology offers a number of potential benefits, it suffers from certain constraints depending on the length of the line and the degree to which the loops are encumbered with incompatible features. *NOI*, ¶ 22. In the same manner, the ability, and even willingness, of a particular entity to provide advanced service in a given area of the country is largely dependent on that entity's specific goals and business strategies. SouthWestern Bell epitomizes this reality in stating that it would be interested in offering DSL service in inner city and rural areas "if there is a proper balance of incentives, risk, and possible reward."[39] That the major telecommunications providers have a highly qualified commitment to serve rural and low-income communities is plainly evident in these communities. Indeed, in some of these areas, the major incumbent local exchange carriers are selling off their switches and service areas in order to concentrate on more lucrative markets.

Finally, focusing on specific technologies or types of service providers could lead to a host of problems as traditional service distinctions and regulatory classifications are increasingly breaking down. The same is true for the types of services that particular types of entities are providing. For example, and as detailed more thoroughly below, public power utilities are involved in all facets of advanced telecommunications deployment as carriers' carriers, competitive local exchange carriers, interexchange carriers, cable providers, internet service

[39] *Petition of Southwestern Bell Tel. Co. et. al*, CC Docket No. 98-91, at 34-35, June 9, 1998.

providers, data providers and wireless providers. It therefore does not make sense to compartmentalize capabilities on the basis of specific technologies (e.g., coax, fiber, wireless) or the type of service provider (e.g., local exchange carrier, cable, utility). Instead, the Commission should focus on stimulating entry and competition among all interested service providers, including public power utilities.

2. The Commission Should Apply The Clear Language and Intent of The Telecommunications Act

Like a doctor, the Commission first should "do no harm." If the Commission simply follows the clear language of the Act, many public power utilities in states that do not have barriers to entry will move forward and deploy advanced telecommunications infrastructure.

Public power utilities have at least three options for using their advanced telecommunications infrastructure to benefit their communities. The simplest option -- and the most likely to be adopted widely by public power utilities -- is to lease dark fiber or bulk telecommunications capacity to telephone companies, cable operators or other private telecommunications carriers.

The second option is to enter into creative partnerships with telecommunications providers, customers or other entities, including schools, universities, hospitals or libraries. Such partnerships can take many forms and provide for a wide range of service offerings by public power utilities. As businesses across the Nation consider locating or relocating their facilities, the ability of a public power utility to enter into such arrangements can be critical to the economic well-being of many communities.

The third option for public power utilities is to become full-fledged providers of telecommunications services to the public, competing head-to-head with telephone companies, cable

operators, transmitters of data and other suppliers of communications services. Scores of communities are now providing cable television, and public power utilities such as Glasgow, Kentucky, Cedar Falls Iowa, Hawarden, Iowa, Muscatine, Iowa, Coldwater, Michigan, and Lusk, Wyoming, are becoming full-service communications utilities.

During the 103rd Congress, APPA urged Congress to do everything possible to encourage municipal and other forms of public electric utilities to participate actively in the development of what was then called the "National Information Infrastructure." APPA advised Congress that some of their members were willing to provide telecommunications services themselves and others were willing to make facilities available to potential competitors of incumbent providers, if doing so would not subject them to the requirements applicable to telecommunications carriers. APPA appealed to Congress to accommodate both groups. For example, in its testimony on S.1822, APPA stated,

> PUBLIC POWER'S INTEREST IN THE
> [NATIONAL INFORMATION INFRASTRUCTURE]
>
> While all electric utilities have telecommunications needs, the manner in which these needs are met differs greatly among public power systems. Some public power systems satisfy their communications requirements primarily by leasing capacity from third parties. Other APPA members rely on communications systems built only to satisfy their own needs. Still others have built communications systems using some capacity on those systems for their own internal needs and leasing excess capacity to others (acting as the owner of a conduit rather than a telecommunications or information service provider). Finally, some public power communities have built communications systems to serve their own needs and to provide other telecommunications and information services to community residents and businesses.
>
> It is APPA's desire to ensure that whatever legislation is enacted, the diverse needs of the public power communities can be met. Specifically, this means that for those utilities who are likely to lease space over facilities owned by a third party,
>
> reasonable access terms, conditions and rates are required. For utilities that will develop and operate communications systems for their own use or to provide conduit but not content service to others, legislation should not saddle them with

> common carrier obligations. Nor should legislation place obstacles in the path to public ownership of new telecommunications facilities or the public provision of telecommunications services. Indeed, the goals of universal service and vigorous competition can be enhanced if such public ownership and involvement is encouraged.

Testimony of William J. Ray on Behalf of the American Public Power Association, Hearings on S.1822 Before the Senate Committee on Commerce, Science and Transportation, 103d Cong., 2d Sess. 351, 353-54 (1994) ("Ray Testimony") (Attachment D hereto). APPA also informed Congress of the contributions that its members could make in bringing competition to the telecommunications marketplace, as exemplified by the experience of Glasgow, Kentucky:

> In the 1980s, Glasgow, a community of 13,000 residents, was served -- but not very well -- by a single, for-profit cable company. The citizens were unhappy with the quality and the price of their cable TV service, so they turned to their municipally owned electric system for help. This plea from the public coincided with the city utility's recognition of the need for an effective demand-side management and load shedding system to avoid huge increases in power costs driven by surges in peak power demand. The Glasgow Electric Plant Board recognized that the same coaxial cable system used to deliver television programming could also be utilized by citizens to manage their power purchases. So our municipally owned electric utility built its coaxial distribution control system which also provides a competing, consumer-owned cable TV system. This new system not only allowed consumers to purchase electricity in real time and lower their peak electrical demand, thus saving money on their electric bills, it provided twice as many television channels as the competing, for-profit cable company at not-for-profit rates -- and delivered better service to boot. Big surprise -- the private company decided to drop its rates by roughly 50 percent and improve its service, too.
>
> But the Glasgow Electric Plant Board didn't stop there. We wired the public schools, providing a two-way, high-speed digital link to every classroom in the city. We are now offering high-speed network services for personal computers that give consumers access to the local schools' educational resources and the local libraries. Soon this service will allow banking and shopping from home, as well as access to all local government information and databases. We are now providing digital telephone service over our system. That's right -- in Glasgow, everyone can now choose to buy their dial tone from either GTE or the Glasgow Electric Plant Board.
>
> The people of Glasgow won't have to wait to be connected to the information superhighway. They're already enjoying the benefits of a two-way, digital,

> broadband communications system. And it was made possible by the municipally owned electric system.

Ray Testimony, at 355-56.

As the Telecommunications Act ultimately reflected, APPA's efforts were successful. To promote competition and diversity in the telecommunications industry, the Senate crafted both the key definitions and preemption provisions of the S.1822 so as to encourage municipal involvement in the full spectrum of telecommunications activities.

Specifically, S.1822 defined the term "telecommunications service" as "the direct offering of telecommunications for profit to the general public or to such classes of users as to be effectively available to the general public regardless of the facilities used to transmit such telecommunications services. . . ." *S. Rep. No. 103-367*, 103d Cong., 2d Sess. 122 (1994) (Attachment E hereto). In explaining this definition, the report used the term "entities" to refer to all persons, whether public or private, that may provide "telecommunications service":

> The definition of "telecommunication service" in new subsection (jj) was broadened from the version in S. 1822 as introduced to ensure that *all entities* providing service equivalent to the telephone exchange services provided by the existing telephone companies are brought under title II of the 1934 Act. This expanded definition ensures that these competitors will make contributions to universal service. . . .

Senate Report on S.1822, at 56 (emphasis added). In the following paragraph, through an example involving electric utilities, the report illustrated the application of this *activity-based* definition of "entity:"

> New subsection (kk) provides a definition of "telecommunications carrier" as *any* provider of telecommunications services, except for hotels, motels, hospitals, and other aggregators of telecommunications services. *For instance, an electric utility that is engaged solely in the wholesale provision of bulk transmission capacity to carriers is not a telecommunications carrier. A carrier that purchases or leases the bulk capacity, however, is a telecommunications carrier to the extent it uses that capacity, or any other capacity, to provide telecommunications services.* Similarly, a provider of information services or cable services is not a

> telecommunications carrier to the extent it provides such services. *If an electric utility*, a cable company, or an information services company *also provides telecommunications services, however, it will be considered a telecommunications carrier for those services.*

Id. at 54-55 (emphasis added). The passage quoted above does not distinguish between publicly-owned and privately-owned electric utilities, and on the next page, the report made clear that no such distinction was intended. There, the report turned to Section 230(a)(1), the preemption provision of S.1822, whose key operative terms the 104th Congress would later incorporate *verbatim* into Section 253 (a) of the Telecommunications Act – "[N]o State or local statute or regulation, or other State or local legal requirement, may prohibit or have the effect of prohibiting the ability of any entity to provide any interstate or intrastate telecommunications service." The report clarified that the definitions and preemption provisions of S.1822 were intended to encourage "State or local governments" -- including, but not limited to, those that operated "municipal energy utilities" -- to participate in developing the National Information Infrastructure. Thus, in explaining one of the exceptions to Section 230, the report stated:

> Paragraph (2) also states that States or *local governments* may make their own telecommunications facilities available to certain carriers and not others so long as making such facilities available is not a telecommunications service. This provision essentially allows a State or *local government* to discriminate not in the regulations it imposes, but in its offering of State-owned or local-owned [facilities to] telecommunications carriers.

Senate Report on S. 1822, at 56 (emphasis added). The report then went on to give an example that explicitly mentioned "municipal energy utilities":

> For instance, some State or local governments own and operate municipal energy utilities with excess fiber optic capacity that they make available to telecommunications carriers. Such a municipal utility may not have sufficient capacity to make it available to all carriers in the market. This provision clarifies that *State or local governments may sell or lease capacity* on these facilities to some entities and not others without violating the principle of nondiscrimination. Since the offering of telecommunications capacity alone is not a "telecommunications service," the nondiscrimination provisions of this section would not, in

any case, apply to the offering of such capacity.

Senate Report on S.1822, at 56 (emphasis added).

Taken together, and especially when viewed in the context of the issues that APPA had raised with Congress, these passages demonstrate that (1) Congress intended that the term "entities" cover *all* public and private providers of "telecommunications service," including electric utilities; (2) Congress understood "electric utilities" to include "municipal energy utilities;" and (3) Congress intended that, if municipalities and municipal electric utilities chose to cross the line from leasing facilities to providing telecommunications services themselves, they would be subject to the same obligations and benefits as the Act extended to any other carrier of telecommunications service. The obligations included, among others, the duty to contribute funds to the universal service program. The benefits included protection from state barriers to entry.

The 103rd Congress ended without passage of new telecommunications legislation because much work needed to be completed in other areas. With respect to the definitional and preemption issues relevant here, however, Congress' work was essentially done. Virtually all that Congress had to do was to incorporate the principles resolved in the 103rd Congress into the 104th Congress' Telecommunications Act of 1996.

Thus, the Joint Explanatory Statement of the Committee of Conference to the Telecommunications Act of 1996 provides further and more explicit evidence that Congress intended that all utilities may "choose" to provide telecommunications services, and that such choices are not to be hindered by state or local barriers to entry:

> New section 253(b) clarifies that nothing in this section shall affect the ability of a State to safeguard the rights of consumers. In addition to consumers of telecommunications services, the conferees intend that this includes the consumers of electric, gas, water or steam utilities, *to the extent such utilities choose to provide telecommunications services.* Existing State laws or regulations that reasonably condition telecommunications activities of a monopoly utility and are

> designed to protect captive utility ratepayers from the potential harms caused by such activities are not preempted under this section. However, *explicit prohibitions on entry by a utility into telecommunications are preempted under this section*.

H.R. Rep. No. 104-458, 104th Cong., 2d Sess. 127 (1996). As before, Congress had no intention of distinguishing between public and privately owned utilities in this passage; instead, its focus was the choices available to consumers of utility services irrespective of the type of ownership of the individual utility.

Referring to this passage in the Joint Explanatory Statement, its author, Congressman Dan Schaefer (R-CO), subsequently confirmed in a letter to the Commission that "Congress recognized that utilities may play a major role in the development of facilities-based local telecommunications competition," that "any prohibition on their provision of this service should be preempted," and that the Commission "must reject any state and local action that prohibits entry into the telecommunications business by any utility, *regardless of the form of ownership or control*." Senator Robert Kerry (D-NE) submitted a similar letter emphasizing that "[i]n using the term "any entity," Congress intended to give entities of all kinds, including publicly-owned utilities, the opportunity to enter these markets." In the Commission's recent Brief in defense of its *Texas Order*,[40] the Commission conceded the accuracy of the legislative materials and history cited above.

In summary, the language, legislative history and purposes of the Telecommunications Act all compel the conclusion that Congress intended public power utilities to play a major role in deploying advanced telecommunications. Now, the Commission need do little more than apply the law as Congress intended.

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[40] Commission's Respondent's Brief filed on July 15, 1998, at pp. 12, 17-20, in the pending review of *City of Abilene v. Commission*, Case Nos. 97-1633 and 97-1634 (D.C. Cir.).

3. The Commission Should Act Vigorously to Eliminate All Barriers To Entry

As is evident from the above discussion, public power utilities are not only well-positioned to deploy advanced telecommunications capabilities, but many are already doing so where barriers to entry do not exist. Unfortunately, such barriers do exist in many states. For example, two of the most notorious state statutes are Section 3.251(d) of the Texas Public Utility Regulatory Act of 1995 and Section 392.410(7) of the Revised Statutes of Missouri, which both prohibit municipalities and public power utilities from providing telecommunications services or facilities. Other states that have enacted statutory barriers to municipal entry include Minnesota, Minn. Stat. Ann. § 237.19 (requires 65% super-majority vote); Nevada, 1997 Nev. Stat. 268.086 (prohibits cities with populations of 25,000 or more from selling telecommunications services); Tennessee, Tenn. Code. Ann. § 7-52-406 (1997) (prohibits entities of local government from providing cable service, paging service, security service and internet service); Arkansas Telecommunications Regulatory Reform Act of 1997, § 9(b) (prohibits municipalities from providing local exchange service); and Virginia § 15.2-1500 Virginia Code (except for the Town of Abingdon, the home of a prominent Congressman, local governments cannot lease or sell telecommunications services, equipment or infrastructure, but local governments can sell their physical infrastructure that is in existence and in place by September 1, 1998).

As the Commission is aware, municipalities and public power utilities have challenged the Texas and Missouri statutes as an unlawful barrier to entry under Section 253 of the Telecommunications Act. In October 1997, the Commission declined to preempt the Texas law, concluding that it did not have the authority to interfere with the relationship between states and

their political subdivisions.[41] The Commission's *Texas Order* is currently being reviewed in the D.C. Court of Appeals.[42] A petition to preempt the Missouri law is currently pending before the Commission.[43]

State laws such as these have a chilling effect on the rapid deployment of advanced telecommunications capabilities, particularly in areas in which public power utilities are the only entities that can feasibly provide or facilitate the provision of competitive telecommunications services. For the reasons discussed above and in APPA's pleadings in the Abilene and Missouri proceedings, the Commission should act promptly and forcefully to eliminate all such barriers.

4. The Commission Should Affirmatively Encourage Public Power Utilities to Engage in Telecommunications Activities

In recognition of the real public benefits that public power utilities are having, and can have, in fostering the rapid deployment of advanced telecommunications capabilities and the availability of advanced services on a competitive basis to all Americans, the Commission should take all appropriate affirmative steps to encourage public power utilities to engage in telecommunications activities. Doing so can only serve the National interest.

IV. CONCLUSION

Public power systems are in a unique position to foster the rapid deployment of advanced telecommunications infrastructure in a manner consistent with the underlying goals of the Telecommunications Act and Section 706. Public power entities are directly responsive and accountable to the people that they serve, and are therefore inherently focused on providing the necessary infrastructure and capabilities that their communities need to flourish.

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[41] *In the Matter of the Public Utility Commission of Texas*, FCC 97-346, (rel. Oct. 1, 1997) ("*Texas Order*").

[42] *City of Abilene, TX, and the American Public Power Association v. Federal Communications Comm'n*, Case Nos. 97-1633 and 97-1634 (D.C. Cir.).

[43] *In the Matter of The Missouri Municipal League, et al*, CC Docket No. 98-122.

APPA submits that the Commission can go a long way toward meeting the requirements of Section 706 by ensuring that public power utilities have a full and fair opportunity to provide or facilitate the provision of telecommunications services in their communities. The Commission has ample authority under the Telecommunications Act to do so; it need only apply the Act as written. In particular, the Commission should adhere to the key definitions in the Act, which were carefully crafted to encourage municipal involvement in telecommunications. It should vigorously apply its preemption authority under Section 253 of the Act to remove all state and local barriers to entry by "any entity," including any public power utility. If the Commission believes that new interpretations or programs are necessary to accommodate new developments since the Act became law, it should ensure that such interpretations or programs do not discriminate against public power utilities.

WHERFORE, THE PREMISES CONSIDERED, APPA respectfully urges the Commission to take action on this *"Notice of Inquiry"* in accordance with the views expressed in these comments.

Respectfully submitted,

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Sean Stokes
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September 14, 1998

CERTIFICATE OF SERVICE

I, Sean Stokes, hereby certify that on this 14th day of September 1998, I caused copies of the foregoing Comments to be served on the parties on the attached Service List, by hand delivery.

By Hand Delivery:

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Federal Communications Commission
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Washington, D.C. 20554

Honorable Susan Ness, Commissioner
Federal Communications Commission
1919 M Street, N.W., Room 832
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September 14, 1998

ATTACHMENT A

Representative Examples of Public Power Telecommunications Activities

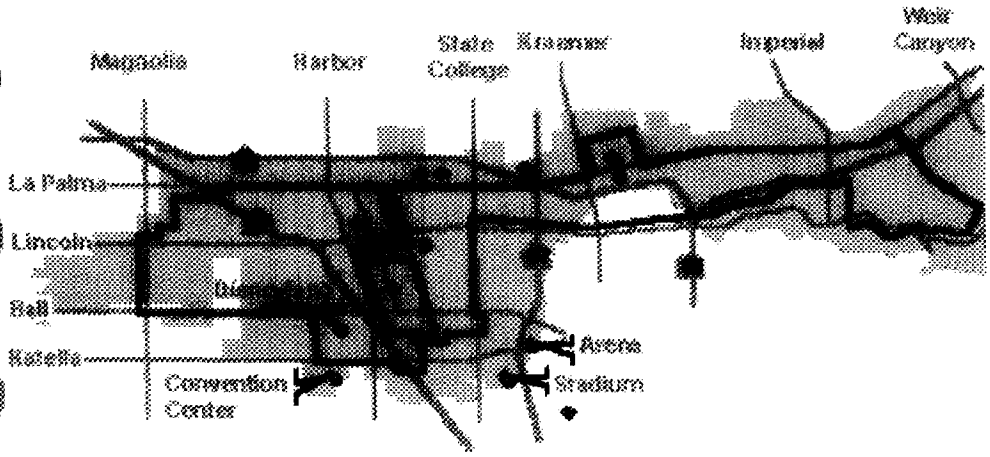
Anaheim, California
Batavia, Illinois
Braintree, Massachusetts
Cedar Falls, Iowa
Gainesville, Florida
Glasgow, Kentucky
Municipal Electric Association of Georgia
Orangeburg, South Carolina
Palo Alto, California
Tacoma, Washington

The City of ANAHEIM

Telecommunications

Anaheim Enters Digital Age with Fiber Optics

The City of Anaheim broke ground in 1997 when it entered an agreement with FirstWorld International, a San Diego-based private telecommunications firm, to develop a fiber-optic Universal Telecommunications System (UTS). At the time of the agreement, FirstWorld's corporate name was SpectraNet International.



The UTS differs from traditional telecommunications systems in that it converges all communications media into a single network. This model balances increased telecommunications competition with control and protection of public streets, thoroughfares and environmental quality. It creates a powerful economic incentive that will increase competition while minimizing disruption to Anaheim streets and public rights-of-way. In addition, network facilities constructed and owned by FirstWorld are built underground, reducing environmental disruption.

This project is 100-percent funded and developed by FirstWorld. The first phase of the UTS development involves a commercial build out to designated areas within the City at a cost of $75 million to FirstWorld. This phase will be completed by December 1998 and includes selected City facilities and selected private business. The second phase, if determined feasible in 2000, will extend the network to all residents and remaining businesses in Anaheim. FirstWorld estimates the second phase will cost

$150–200 million.

Universal Telecommunications System Common Questions and Answers

Q: Why did the City of Anaheim build a fiber-optic infrastructure?

A: The City's Public Utilities Department had a 30-year-old internal communications system that operated on twisted-pair copper wire and associated electronic equipment. This system was used primarily for electric system protection, switching and control. When the City needed to replace the aging system, the Public Utilities Department selected fiber-optic technology because of its reliability, capacity and quality. The City then built a 50-mile 96-strand fiber-optic cable.

Q: Is the City of Anaheim competing with private telecom enterprises?

A: No. The City simply is making a fiber-optic 50-mile backbone system available to the private sector because the City has excess capacity. Scores of city, county and state governments across the country do the same. The Public Utilities Department uses a third of the fiber-optic cable and FirstWorld, under contract, leases 60 fibers to own, operate and finance the Universal Telecommunications System (UTS). Before the City selected FirstWorld, a lengthy Request For Proposal process was initiated by the City, and 18 proposals were submitted. The City awarded the contract to FirstWorld to construct, own and operate a broadband system that ultimately can provide universal access to the entire Anaheim community. The entire build out is owned, operated and financed by the private sector. This project will let the businesses and residents of Anaheim use telecommunications services through a private entity.

Q: Does FirstWorld's development stifle competition?

A: No; in fact, FirstWorld's open architecture aspect of the network permits access to numerous service providers as well as to customers. The architecture of the network offers virtually unlimited capacity (bandwidth) that is open to all providers of telecommunications, entertainment and data services. This neutral infrastructure lets communications providers offer services over the network for less cost than constructing their own infrastructure. The FirstWorld project promotes competition in Anaheim. Other local exchange carriers can enter the marketplace in Anaheim without investing in large capital projects because the fiber-optic infrastructure already exists.

Q: Are Anaheim taxpayers at financial risk due to this project?

A: No. The City and FirstWorld entered into agreements on Feb. 25, 1997. Under the terms of the agreements, FirstWorld leases access to the Cityís 50-mile loop and uses this loop as the main backbone of its fiber-optic network.

FirstWorld privately finances, constructs, owns and operates the broadband network.

Q: Will tax revenues be generated from this project?

A: Yes. Because FirstWorld's UTS is 100-percent privately owned and operated, its network is taxable by all conventional property, sales, use and business taxing authorities.

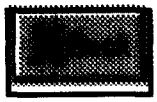
Q: Does the City regulate telecommunications providers such as Pacific Bell or FirstWorld?

A: No. They are regulated by the Federal Communications Commission and the California Public Utilities Commission. Both companies are required to obtain street-cut permits from the City as would any other contractor wishing to dig up streets; all contractors are required to adhere to the same standards for the safety and protection of public and private property.

Q: How will this project affect the City's economic development programs?

A: Not only will the UTS provide existing Anaheim businesses with access to an array of value-added services, it also attracts businesses that want to use these services to the City. The UTS lays the groundwork for making Anaheim a world-class telecommunications center. This local development provides economic growth by promoting advanced telecommunications services, attracting telecommunications industry to the area and adding a new company to the community.

For more information, call Shana Epstein, Anaheim Public Utilities telecommunications project coordinator, at (714) 765-4106 or email to tcgroup@anaheim.net .



The Batavia, Illinois, Department of Public Works

The Batavia Department of Public Works
200 North Raddant
Batavia, IL 60510
(708) 879-1424

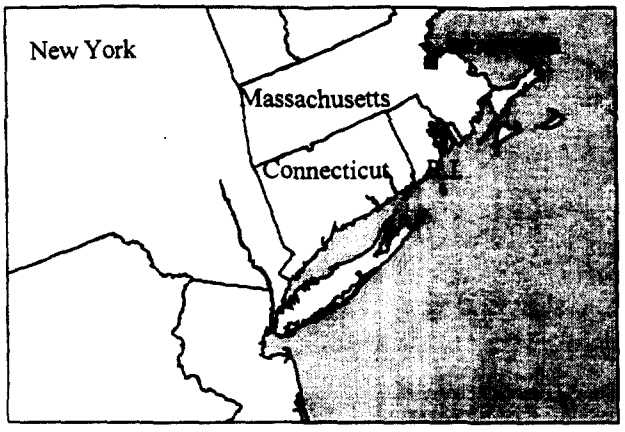
The community of Batavia, Illinois is located 45 miles west of Chicago and has a population of 22,000 people. Electric, water and wastewater services are distributed by the Batavia Department of Public Works. Though the Batavia Department of Public Works does not have a communication system, it is now studying the cost and feasibility of installing a comprehensive broadband communication network. The study, a detailed comparison between fiber optic systems and fiber/coax hybrid networks, is scheduled to be completed by the fall of 1996 and Batavia plans to install the system soon thereafter.

The city's main objective is to implement a system that will improve public utility services, upgrade internal communications within the Public Works Department and governmental offices and, eventually, provide the citizens of Batavia with cutting-edge communication capabilities. One of the network's primary applications will be for the Department of Public Works' Supervisory Control and Data Acquisition System (SCADA). SCADA is an essential tool for monitoring and controlling lift stations, water towers, and power distribution stations and offers customers more reliable and efficient utility services. In addition to improving internal communications, the city also plans to incorporate the schools, libraries, city agencies, hospitals and businesses onto the network.

Once Batavia has successfully installed a broadband communications system, the city plans to maximize the infrastructure by offering its customers enhanced services at rates lower than the private industry. With the utility industry becoming

increasingly competitive, the City of Batavia wants to keep the utility up-to-date and anticipates providing cable television, telephone services and interactive data exchange to its subscribers. Batavia will also explore the possibility of leasing out portions of the infrastructure as a way of generating additional revenue for the municipality and to help pay for the cost of the system.

Braintree, Massachusetts, Electric Light Department



Braintree Electric Light Department
44 Allen Street
Braintree, MA 02184
http://www.beld.com

The town of Braintree is located about 15 miles south of Boston, Massachusetts. Electricity is distributed by the Braintree Electric Light Department (BELD) to approximately 14,000 customers. To improve internal communications, the BELD installed a fiber optic cable network between the main generation facility and the administrative offices. This system has since evolved into a comprehensive fiber optic network.

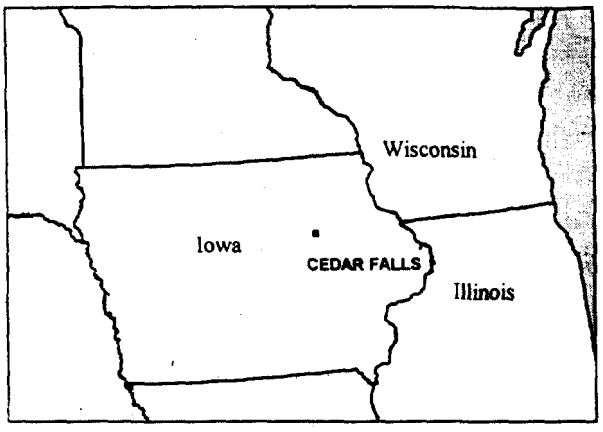
Braintree's fiber optic network is designed to grow as new technologies and applications become available. Following the success of BELD's internal phone system and SCADA system, Braintree looked to improve communication services throughout the community. As a result, the town hall, high school, fire department, light and water departments were connected by e-mail and a direct-dial phone system. Future plans include linking homes to the network. In terms of communications services, Braintree's goal is to expand the system and delve into new applications. Braintree is hoping this will be an effective way of improving customer relations, accumulating additional revenue and gaining a distinct advantage over future suppliers of utility services.

Installation of the new cable began during the winter of 1993 and continued throughout the year. BELD used its own crew and most of the installation was within existing duct banks. Braintree opted for a SONET system so traffic could be routed in either direction in the event of a break. SONET also provides for high-capacity of data transmission. A ring of fiber 16 miles long was looped around

the town, creating a ring backbone architecture that allows the system to maintain its connection in case of fiber or node failure.

Braintree Electric Light Department's future plans include moving fiber optic cable to homes. The city plans to introduce a high-density automatic meter reading and geographical and broadband information systems. The broadband system will be capable of providing all types of communication services to every customer in Braintree, including cable television, Internet access, telephone service, billing and load management. Braintree is also exploring ways to provide electronic shopping at one of the local elderly housing facilities.

Cedar Falls, Iowa, Utilities



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Cedar Falls, located in northeastern Iowa, has a population of 35,000. Electric, water and gas services are distributed through the Cedar Falls Utilities Department (CFU). The City of Cedar Falls is building an ambitious and innovative broadband coax/fiber optic network that will make state-of-the art communications available to city residents and improve the utility's internal network.

Prior to developing its broadband communications network, Cedar Falls conducted an intense strategic planning and analysis campaign. First, the city spent two years analyzing technical and financial considerations and studying utility telecommunication systems such as those in Glasgow, Kentucky. The city then hired a consultant to investigate the feasibility of municipally-owned fiber optic systems. Following the consultant's report, CFU submitted the proposal to the city council and received a resolution that urged the design and development of a public communications utility system.

Design of the new system began immediately following voter approval in October of 1994. The 50-mile-long fiber optic backbone, installed by CFU crews, consists of AT&T and Alco dielectric self-supporting cable that ranges between 12 fiber strands in the distant suburbs and 108 strands in the downtown section near the head-end. All cable, including the coax to homes, was attached to existing CFU poles. Installment of cable television is being built in phases—with fiber optic links to 10 neighborhood "nodes" and coaxial cable connected to individual homes. The city also acquired five satellite dishes for the cable service and head-end equipment for the fiber network from Scientific Atlanta.